

What is claimed:

1. A purified and isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising the amino acid sequence shown in SEQ ID NO:2 of Figure 7.
2. A purified and isolated nucleic acid comprising a nucleotide sequence shown in SEQ ID NO:1 of Figure 7.
3. A purified and isolated nucleic acid comprising a recombinant nucleotide sequence comprising a nucleotide sequence shown in SEQ ID NO:1 of Figure 7 or a homolog or fragment thereof.
4. An expression construct comprising the nucleic acid according to claim 2 operatively linked to an expression control sequence, said expression construct capable of encoding a MANF2 polypeptide or variants thereof.
5. A host cell transformed or transfected with the expression construct of claim 4.
6. A host cell transformed or transfected with a polynucleotide wherein said polynucleotide includes a strand containing a human nucleotide sequence that hybridizes to a DNA comprising the non-coding strand complementary to SEQ ID NO:1 of Figure 7, under the following hybridization conditions:
  - (a) hybridization at 42 °C for 20 hours in a solution containing 50% formamide, 5 X SSPE, 5 X Denhardt's solution, 0.1% SDS and 0.1 mg/ml denatured salmon sperm DNA; and
  - (b) washing the filter twice for thirty minutes at room temperature and twice for thirty minutes at 65 °C with a wash solution containing 1xSSC, and 0.1% SDS.
7. An isolated and purified MANF2 polypeptide comprising the amino acid sequence of SEQ ID NO:2 of Figure 7.

8. Method of producing a MANF2 polypeptide according to claim 7, said method comprising the steps of:  
culturing a host cell of claim 5 comprising a polynucleotide encoding said polypeptide operably associated with a promoter sequence such that the nucleic acid sequence encoding said polypeptide is expressed; and  
isolating said polypeptide from said host cell or from a growth medium in which said host cell is cultured.
9. Method of producing antibodies comprising:  
- immunising a mammal with the isolated and purified *MANF2* protein of claim 7 or an antigenic fragment thereof.
10. Use of the isolated and purified *MANF2* protein of claim 7 or an antigenic fragment thereof as an antigen.
11. An antibody produced by the method of claim 9.
12. The antibody of claim 11 which is labeled with a detectable label.
13. A kit of reagents for use in detecting the presence of MANF2 or allelic variant thereof in a biological sample, comprising  
- a container; and in said container:  
- a compound, preferably labeled, capable of detecting MANF2 gene or allelic variants thereof.
14. The kit according to claim 13, wherein said compound is a primer or probe.
15. The kit according to claim 13, wherein said compound is an antibody as defined in claim 11.
16. The kit according to any one claims 13-14 for assessing the predisposition of an individual to a condition mediated by variation or dysfunction of MANF2.
17. The kit according to claim 16 further comprising instructions for using the kit.

18. A transgenic non-human animal containing human or murine MANF2 gene as a transgene.
19. A transgenic non-human animal containing a transgene or insertion disrupting  
5 expression of a MANF2 gene or a homolog thereof.
20. A pharmaceutical compound comprising MANF2 nucleic acid molecule, MANF2 protein, MANF2 peptide fragment, MANF2 agonists, MANF2 antagonists or anti-MANF2 antibody.
- 10 21. Method for treatment of a condition dependent on MANF2 wherein a pharmaceutically effective amount of the compound of claim 20 is administered to a patient in need of such treatment.
- 15 22. The method according to claim 21, wherein said patient suffers or is at risk to suffer from a peripheral neuropathy.
23. The method according to claim 22, wherein said peripheral neuropathy is associated with a systemic disease.
- 20 24. The method according to claim 21, wherein said patient suffers or is at risk to suffer from Alzheimer's disease.
- 25 25. The method according to claim 21, wherein said patient suffers or is at risk to suffer from Parkinson's disease.
26. Method for affinity purification of receptor that binds to the MANF2 comprising the following steps: a) contacting a source of MANF2 receptor with an immobilized MANF2 under conditions whereby the MANF2 receptor to be purified is selectively adsorbed onto  
30 the immobilized MANF2; (b) washing the immobilized MANF2 and its support to remove non-adsorbed material; and (c) eluting the MANF2 receptor molecules from the immobilized MANF2 to which they are adsorbed with an elution buffer.